

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Patent Application of:

Docket No.: P15593

Jiann-Chang Lo

Serial No.: 10/659,958

Group Art Unit: 2828

Filed: September 10, 2003

Examiner: Marcia A. Golub

For: **SEEKING AND TRACKING CONTROL FOR LOCKING
TO A TRANSMISSION PEAK FOR A TUNABLE LASER**

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 C.F.R. §41.37 (a)

Sir:

Appellants have filed a timely Notice of Appeal from the Final Office Action, on December 21, 2006. A single copy of this brief is provided pursuant to 35 U.S.C. § 41.37(a).

Please charge the Appeal Brief fee to Intel Deposit Account 50-0221. If additional extensions of time are necessary, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefore (including any additional fees for filing of the Appeal Brief) are hereby authorized to be charged, or overpayment credited, to Intel Deposit Account 50-0221.

REAL PARTY IN INTEREST

The real party in interest in this appeal is Intel Corporation, assignee of the entire interest in the above-identified application.

RELATED APPEALS AND INTERFERENCES

The Appellants, their legal representatives and the Assignee are not currently aware of any appeal that may directly affect or be indirectly affected by or have some bearing on the Board's decision in this appeal. Attached hereto is a Related Proceedings Appendix showing no related appeals or interferences.

STATUS OF THE CLAIMS

Claims 1, 8, 15, and 22 are currently pending.

Claims 1, 8, 15, and 22 are currently rejected and the subject of this appeal.

Claims 2-7, 9-14, 16-21 have been cancelled.

No claims have been withdrawn or allowed. The claims in issue are attached in the "Claims Appendix" attached herewith.

STATUS OF AMENDMENTS

All prior amendments to the application have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 1

The invention recited by claim 1 is directed to a tunable laser (**Fig. 4, paragraph [0034]**) comprising:

- a temperature controlled sled (**Fig. 4; 416 and 418; paragraph [0039]**) ;
- an etalon (**Fig. 4, 516, 518, 520 and 522; paragraph [0035]**);
- a multiple bandwidth mode controller comprising a high bandwidth mode and a lower bandwidth mode (**Fig. 4, 420 paragraph [0040]**).

said controller to initially drive said etalon in said high bandwidth mode for a coarse tuning adjustment and switch to said lower bandwidth mode to drive said temperature controlled sled for fine tuning adjustment when an error signal associated with a target frequency is within a threshold range (**[paragraph [0044]**).

Independent Claim 15

The invention recited by claim 15 is directed to a system, comprising:

- an external cavity diode laser (ECDL) (**Figure 4, 400 paragraph [0044]**).

a temperature controlled sled to tune the ECDL (Fig. 4; 416 and 418; paragraph [0039]);

an etalon to tune the ECDL (Fig. 4, 516, 518, 520 and 522; paragraph [0035]);

a multiple bandwidth mode controller comprising a high bandwidth mode for seeking a new target frequency and a lower bandwidth mode for tracking the target frequency (Fig. 4, 420 paragraph [0040]).

said controller to initially drive said etalon in said high bandwidth mode for course tuning adjustments and then in said lower bandwidth mode to drive said temperature controlled sled for fine tuning adjustments when an error signal associated with a target frequency is within a threshold range ([paragraph [0044]).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over USP 6,724,789 to Vujkovic-Cvijin ('789) further in view of USP 6,359,915 to Koch ('915).

2. Claims 8 and 22 stand rejected under § 103(a) as being unpatentable '798 and '915, as above, further in view of US USP 6,222,861 to Kuo ('861).

ARGUMENT

REJECTION UNDER 35 U.S.C. 103(a) ***Claims 1 and 15***

Appellants appeal the rejection of all pending claims, which is based on the Examiner's position that the claimed invention is obvious over the combination of Vujkovic-Cvijin (herein after '789) in view of Koch (hereinafter '915).

This position reflects a basic misunderstanding and misapplication of patent law and the MPEP, and Appellants submit not only that the claimed apparatus is distinct from that disclosed by this combination, but also that the various phrases and limitations in the claims are to be given patentable weight.

Claims 1 and 15:

Briefly, a controller comprises a high bandwidth mode and a low bandwidth mode. When initially locking to a new channel, the high bandwidth controller mode may be used to supply more energy to drive tunable etalon (i.e. filter) to achieve faster seeking. When an error signal approaches within a pre-defined threshold of zero error, the controller may be switched to a lower bandwidth mode supplying less power to a temperature controlled sled to softly approach the target frequency and avoid overshoot. The lower bandwidth controller mode may keep the noise level lower and provide better frequency tracking stability to the tunable laser. As previously amended, it has been further specified that course adjustments are made in the higher bandwidth mode driving

the etalon and fine tuning adjustments are accomplished in the lower bandwidth mode driving the temperature controlled sled.

The primary reference, '789, states on column 4, lines 8-15:

"This allows, for example, high speed frequency tuning of the laser light to be effected by adjusting the injection current (for maintaining a signal at a desired channel frequency, for example) while using thermal control of the laser for larger, slower changes (for example, to select the channel for a particular laser, to maintain the injection current roughly centered within an adjustment range, and the like)" (emphasis added).

Thus, '789 does not make high speed adjustments with an etalon, as claimed, rather, it makes these adjustments by adjusting the injection current.

Further, '789 does not make fine tuning adjustments with thermal control as claimed, rather '789 clearly states that "larger" changes are made in this manner. This is opposite to the claimed invention.

The Examiner appears to have cited '789 (above) for teaching a multiple bandwidth controller. However, it unfortunately does not teach or suggest controlling the parameters recited in Applicant's claims. The Examiner has therefore combined the teachings of '915 to show course tuning with a Bragg filter and fine tuning with temperature control.

However, it is improper to combine '789 and '915 in this manner, because, even assuming *arguendo* that '789 does disclose a multimode controller, it clearly controls "large" (i.e. course) tuning with temperature. Thus, even if one were to combine the references, the multimode controller of '789 would still have to use temperature for course adjustments as this is what is clearly taught. Since this is opposite to the claimed invention, the combination fails to make a case for *prima facie* obviousness.

Advisory Action: In the advisory Action, the Examiner rejected these arguments out of hand by stating that *"[Applicant's amendment] does not place the application in condition for allowance because: In response to the applicant's arguments against the references individually; one cannot show nonobviousness by attacking the references individually where the rejections are based on combinations of references..."*

Clearly, Appellant did not attach the references individually, but argued, and continues to argue that the combination does not meet the test for *prima facie* obviousness and therefore should be withdrawn.

Applicant's claim 1 and similarly independent claim 15, now recite "...a temperature controlled sled to tune the ECDL; an etalon to tune the ECDL;...said controller to initially drive said etalon in said high bandwidth mode for course tuning adjustments and then in said lower bandwidth mode to drive said temperature controlled sled for fine tuning adjustments when an error signal associated with a target frequency is within a threshold range.

The combination of '789 and '915 can teach nothing but large (course) tuning with temperature. This opposite to what is claimed. As such, it is respectfully requested that the Board reverse the Examiner on these rejections.

Rejection under 35 U.S.C. 103(a)
Claims 8 and 22:

The Examiner further relies on Kuo in rejecting claims 8 and 22. He appears to cite this merely for teaching a feed forward loop since both claims 8 and 22 are directed to where the "controller comprises a Bang-Bang controller or other open loop controller in said high bandwidth mode".

However, as previously argued, Kuo appears to shows a "loop filter" driven in one of two modes; wide mode and narrow mode and does not cure the defects of '789 and '915.

Column 6, lines 44-50 indicate: "In one embodiment, loop filter 216 can be implemented as a programmable element to allow adjustment of the loop response based on the system requirement. For example, initially, the loop response can be set wide for increased likelihood of acquisition and quicker settling time. Once the wavelength of laser 112 has been approximately adjusted to the specified wavelength, the loop response can be narrowed for improved tracking and phase noise performance" (emphasis added).

However, both the “coarse” and “fine” tuning of Kuo appear to rely on the adjusting the transfer function of a “loop filter”. In contrast, Applicant’s coarse tuning in high bandwidth mode is carried out with an etalon and the fine tuning in low bandwidth mode is carried out with a temperature controlled sled.

Applying the high bandwidth mode to one type of tuning element and the lower bandwidth mode to a second type of tuning element is not taught or suggested by Kuo nor, for the reasons noted above is it taught or suggested by ‘789 or ‘915. Thus, this combination also fails to make a case for prima facie obviousness and the Board should reverse the Examiner on these rejections.

CONCLUSION

In summary, the combination of Vujkovic-Cvijin (789) in view of Koch ('915) or these two further in combination with Kuo ('861) does not show a conclusion of obviousness under 35 U.S.C. §103(a).

The Examiner has given Appellant's argument no creed simply stating that the references were argued individually and not in combination. This is clearly not the case. Appellants have clearly argued that the combination of these references do not teach or suggest the claimed invention and, in fact teach the opposite. Appellants thus respectfully submit that the rejections of the claims are in error and that reversal is warranted in this case.

Respectfully submitted,

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CLAIMS APPENDIX

A copy of the claims involved in the appeal is provided below.

1 (previously presented). A tunable laser, comprising:

a temperature controlled sled;

an etalon;

a multiple bandwidth mode controller comprising a high bandwidth mode and a lower bandwidth mode,

said controller to initially drive said etalon in said high bandwidth mode for a coarse tuning adjustment and switch to said lower bandwidth mode to drive said temperature controlled sled for fine tuning adjustment when an error signal associated with a target frequency is within a threshold range.

Claims 2-7 (cancelled)

8 (original). The tunable laser as recited in claim 1 wherein said controller in said high bandwidth mode comprises a Bang Bang controller or an open loop controller.

Claims 9-14 (cancelled)

15 (previously presented). A system, comprising:

an external cavity diode laser (ECDL);

a temperature controlled sled to tune the ECDL;

an etalon to tune the ECDL;

a multiple bandwidth mode controller comprising a high bandwidth mode for seeking a new target frequency and a lower bandwidth mode for tracking the target frequency,

said controller to initially drive said etalon in said high bandwidth mode for course tuning adjustments and then in said lower bandwidth mode to drive said temperature controlled sled for fine tuning adjustments when an error signal associated with a target frequency is within a threshold range.

Claims 16-22 (cancelled)

22 (original). The system as recited in claim 15 wherein said controller comprises a Bang-Bang controller or other open loop controller in said high bandwidth mode.

Claim 23 (cancelled).

EVIDENCE APPENDIX

This section lists evidence submitted pursuant to 35 U.S.C. §§1.130, 1.131, or 1.132, or any other evidence entered by the Examiner and relied upon by Appellant in this appeal, and provides for each piece of evidence a brief statement setting forth where in the record that evidence was entered by the Examiner. Copies of each piece of evidence are provided as required by 35 U.S.C. §41.37(c)(ix).

NO.	EVIDENCE	BRIEF STATEMENT SETTING FORTH WHERE IN THE RECORD THE EVIDENCE WAS ENTERED BY THE EXAMINER
1	N/A	N/A

RELATED PROCEEDINGS APPENDIX

Pursuant to 35 U.S.C. §41.37(c)(x), copies of the following decisions rendered by a court of the Board in any proceeding identified above under 35 U.S.C. §41.37(c)(1)(ii) are enclosed herewith.

NO.	TYPE OF PROCEEDING	REFERENCE NO.	DATE
1	N/A	N/A	N/A